EVALUATING AND DEVELOPING LOGISTICS SYSTEM FOR EXPORTING SMALL AND MEDIUM ENTERPRISES
Case Study in D.I. Yogyakarta Province and Adjacent Areas, Indonesia

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ABSTRACT

Indonesia is ranked 75 of 155 countries in the world for the Logistics Performance Index. Thus, logistics services efficiency has to be improved to make sure SMEs can be more competitive and gain benefit from international trade arena. Yogyakarta with its viscous culture has become a favorite tourism destination, with many art craft products. Its unique location which far from seaport inflicts higher cost to the exporting cost. The study is to understand the system, understand the constraints and provide recommendation to improve the efficiency of current system.
The study uses questionnaire survey as the method to gather the data. It consists of 2 surveys, on survey 1 on SMEs and survey 2 on forwarders. The analysis is mainly descriptive. Results of survey 1 are that the respondents are quite satisfied with current system which is 90% of total respondent, 82 % of total respondents never have problems with the customs, and the biggest problem is uncertain regulation. Results of survey 2 are 89 % of total respondent never have problem with customs, the biggest problem is bribery and uncertain regulations, and the time needed to export is quite long.
The recommendations are established by developing 5th party logistics, constructing clear and market responsive regulations, and improving the facilities of transport infrastructure.

Keywords: SME, logistics, Indonesia, export.

1 INTRODUCTION

SMEs, which have smaller capital than medium or large enterprises, really depend on logistics services to compete with larger companies. Thus, logistics services efficiency has to be improved to make sure SMEs can be more competitive and gain benefit from international trade arena.

Yogyakarta as one of finest tourism destination also has many exporting SME companies. Usually, these companies use third party companies to help them in logistics and distribution process. However, the third party companies have limitations in various aspects in developing a logistics strategy, in example they only send small amount of goods in each shipment. This condition leads to inefficient logistic process resulting high logistic cost and high goods transportation cost. The objectives of this study are:

a) To provide information of existing logistics system in exporting SMEs in Yogyakarta and surrounding areas.
b) To evaluate the existing logistics system in exporting SMEs in Yogyakarta and surrounding areas.
c) To understand constraints for SMEs in Yogyakarta and surrounding areas in exporting their products.

The result of this study could be used to understand the constraints and advantages in current condition, and to understand the perception of consumers and freight forwarders on current logistic condition. This research also could be used to support or deny the previous research about the exporting performance of developing country in Asia, especially Indonesia. Furthermore, this research could be used as a base to improve the exporting logistics system in Yogyakarta Province and other SMEs production areas in other places.

2 LITERATURE REVIEW

2.1 Definition of Small and Medium Enterprises

Table 1 provides small and medium Enterprises categorization based on international definition

Table 1. Small and medium enterprises categorization (European Commission, 2005)

Enterprises Category	Staff Headcount	Annual Turnover	Or Annual Balance Sheet Total
Medium-Sized	< 250	≤ € 50 million	≤ € 43 million
Small	< 50	≤ € 10 million	≤ € 10 million
Micro	< 10	≤ € 2 million	≤ € 2 million

Definition based on Indonesian Statute No. 5 in 1995:

a) Enterprises which has a net worth of at most Rp200,000,000, excluding land and buildings business.
b) Enterprises which has annual sales of Rp1,000,000,000.
c) Owned by Indonesia's Citizen.
d) Independent, not subsidiaries or branches of companies that owned, controlled, or affiliated directly or indirectly by Medium or Large enterprises.
e) Individual enterprise form, enterprise that are not legal entity, or a legal entity, including cooperatives.

2.2 Logistics Problems in Indonesia

As mentioned above, Indonesia's position in international logistic arena is very low. Based on Ministry of Economy Coordinator of Indonesia (2012), some picture of the condition of national logistics issues, can be identified as follows:

a) The absence of effective coordination of the prime movers of commodities (key commodity factor) as a driver of logistics activities.
b) Transportation infrastructure is not adequate in terms of both quantity and quality.
c) The low competitiveness of the actors and logistics service providers due to limited business network of actors and local logistics service provider.
d) The absence of the availability and reliable network infrastructure to support the.
e) Information and Communications Technology.
f) The low HR competencies of logistics, which is accompanied by inadequate Institute for Education and Training Logistics.
g) Regulations and policies are still partial and sectorial, accompanied by low enforcement.

2.3 Yogyakarta Condition

The detail of Yogyakarta Province exporting value can be seen in Figure 1 below.

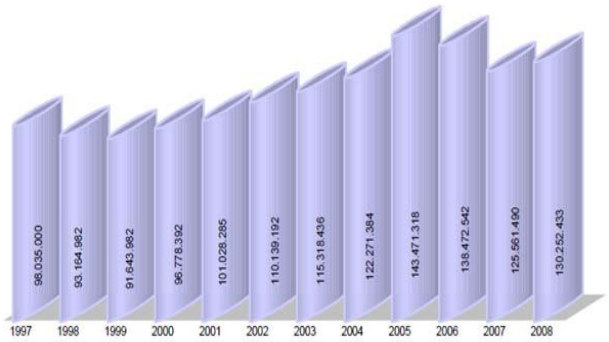


Figure 1. Value of export in Yogyakarta Province 1997-2008 in US$ (BPS of Yogyakarta, 2009).

Table 2. Export by ports of load in Yogyakarta Province in 2008 (Department of Trade and Industry of Province of Yogyakarta, 2009)

Ports of Load	Volume (Kg)	%	Value (US$)
Tanjung Priok Seaport	3,384,604	8.34	31,655,145
Soekarno-Hatta Airport	481,213	1.19	15,297,665
Tanjung Emas Seaport	29,957,029	73.83	69,534,106
Adisutcipto Airport	179,030	0.44	3,581,887
Tanjung Perak Seaport	6,533,328	16.10	7,731,070
Ngurah Rai Airport	1,939	0.00	48,162
Juanda Airport	27,923	0.07	2,188,072

3 RESEARCH METHODOLOGY AND DATA COLLECTION

3.1 Location

The research took place in Yogyakarta Province and surrounding areas in Indonesia.

3.2 Data

Below are the secondary data that have already been collected:

a) Map of Yogyakarta Province.
b) Map of Java Island, where Yogyakarta Province and the ports are located.

c) Data about ports that used in exporting for enterprises from Yogyakarta Province.
d) Type and volume of commodities which are exported from Yogyakarta Province.
e) Data of Small and Medium Enterprises in Yogyakarta Province which do exporting from SMEDC UGM.

3.3 Selection of Survey Methods

The method used in completing the research is by using questionnaire. Based on Milne (1999), the advantages of questionnaires are:

a) Questionnaires are more objective.
b) In general, information collection using a questionnaire is quick.
c) Useful information can be collected from most of member of a group.

3.4 Survey Content

The questions used in the questionnaire are listed below:

a) Respondent's information: sector, address, weight or volume per consignment, estimated value of goods per consignment, and location of warehouse.
b) Respondent's perception of logistics cost.
c) Respondent's perception of travel time.
d) Respondent's perception of current logistics service.
e) Freight forwarder company which are used in exporting

3.5 Sample Design

In this study, the author will only use approximately 10 SME data for pilot survey data, 70 SME data for survey 1 and 9 companies for survey 2.

3.6 Survey Form Design

In addition, the types of questions are:

a) Multiple choices.
b) Preference.
c) Essay type.

3.7 Pilot Survey

The pilot survey was launched in the beginning of March; with the total number of respondents were 10 exporting SMEs.

3.8 Cost and Duration of Survey and Analysis

The author has to provide transport cost for officers from SMEDC UGM in distributing the questionnaire. The cost for transport is about £4 per respondent. In total, the author provides approximately £356 for transport cost.

Pilot survey and survey on freight forwarder companies took approximately 2 weeks, but survey on exporting companies, which has 70 respondents, was finished in approximately 1 month. The author will use descriptive with the help of Microsoft Excel software as tool to analyze the result of each questionnaire.

3.9 Flow Chart

In order to obtain the maximum results, the study was carried out through the following flow chart (see Figure 2).

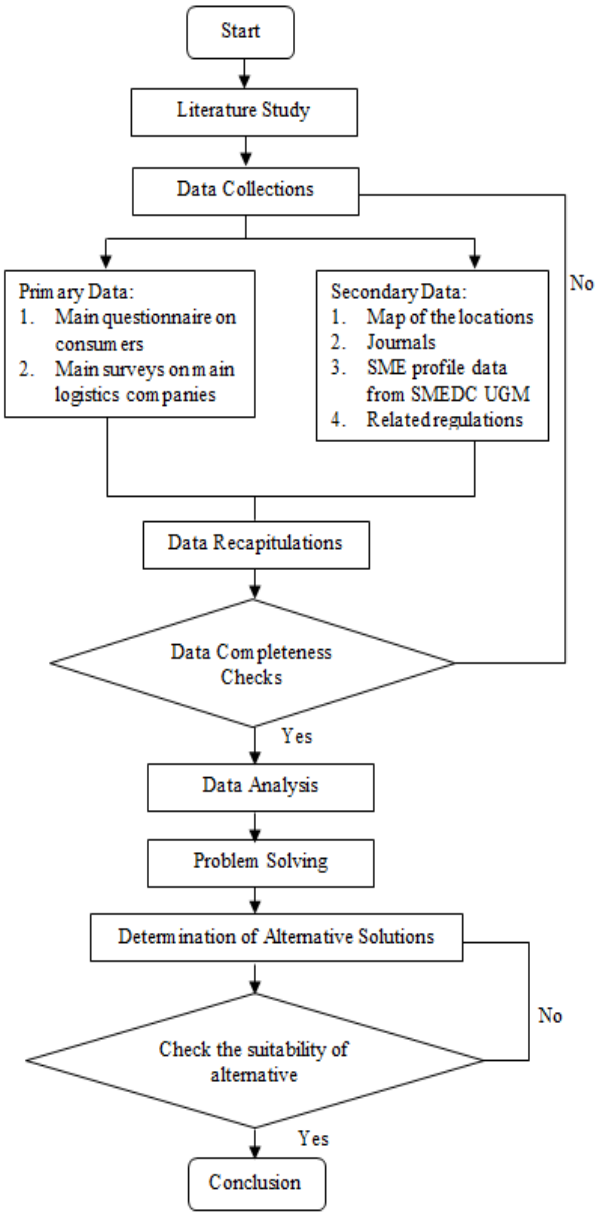


Figure 2. Flow chart of the study.

4 RESULTS AND DATA ANALYSIS

4.1 Survey 1 Results and Analysis

Details of respondents in 5 (five) regencies in Yogyakarta Province are shown in Figure 3 thru Figure 5.

Table 3. Average, minimum, maximum, and modus for each unit type

Parameter	Value	Unit
Avg weight	26060.72	kg
Avg volume	38.28	m³
Min weigh	2.00	kg
Min volume	0.30	m³
Max weight	500000.00	kg
Max volume	338.50	m³
Modus weight	5.00	Kg
Modus volume	30.00	m³
STDDev Weight	100405.41	Kg
STDDev Volume	51.01	m³

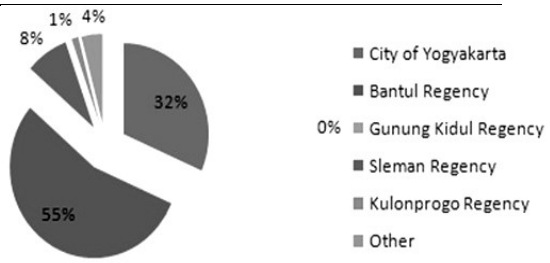


Figure 3. Percentage of business sectors of each respondents.

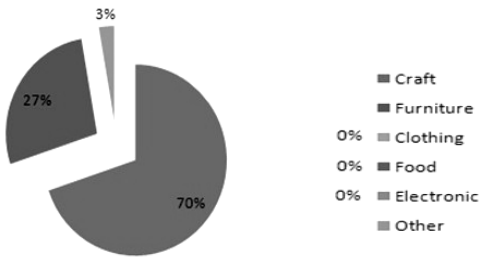


Figure 4. Percentage of location of production.

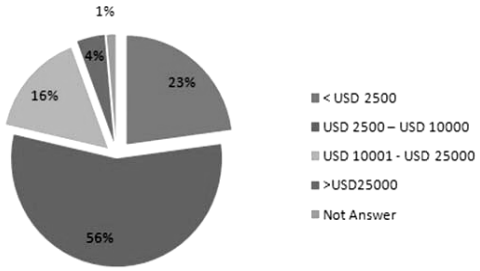


Figure 5. Percentage of Value of Goods.

Figure 6 thru Figure 9 show the results of survey on the movement of goods to warehouse in 5 (five) regencies in Yogyakarta Province.

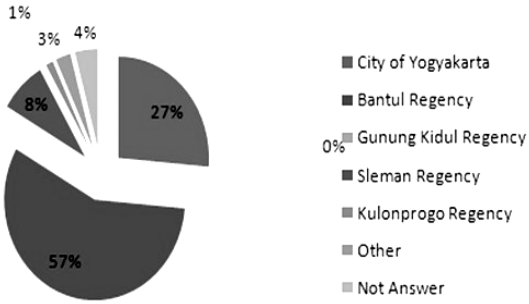


Figure 6. Percentage of location of warehouse.

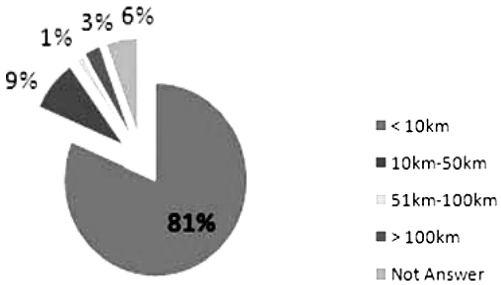


Figure 7. Percentage of distance to warehouse.

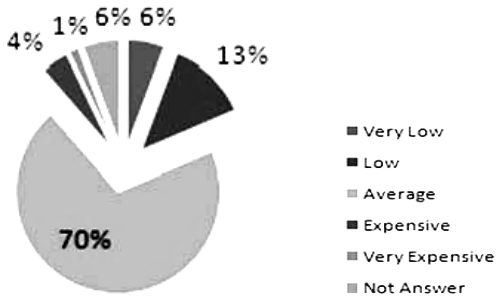


Figure 8. Percentage of cost to warehouse.

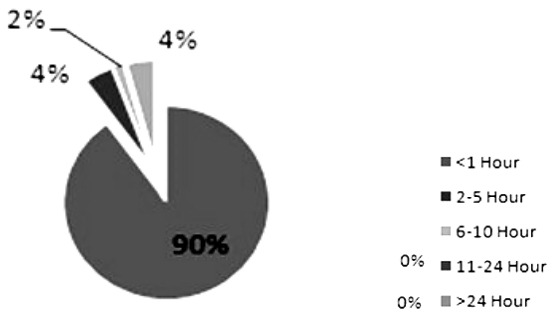


Figure 9. Percentage of travel time to ware house.

The information on the characteristics of movement of goods to ports was identified through survey and the results are shown on Figure 10 thru Figure 16.

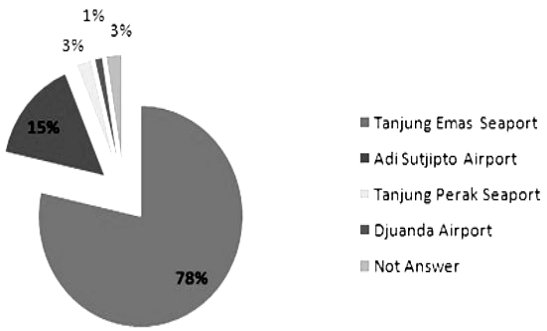


Figure 10. Percentage of port used by exporting SMEs.

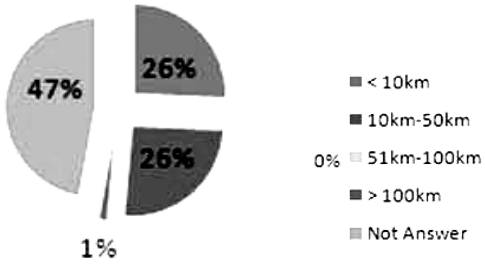


Figure 11. Percentage of distance to airport.

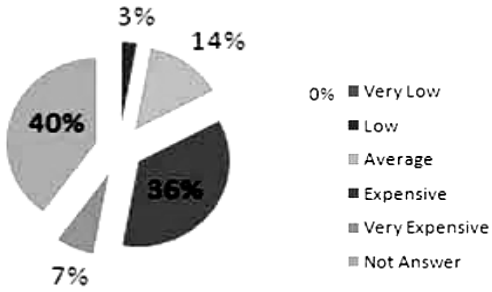


Figure 12. Perception of cost to airport.

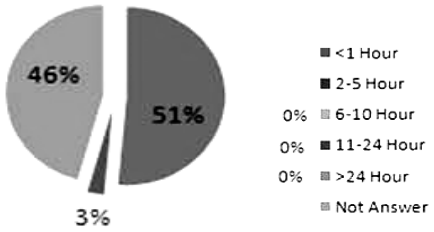


Figure 13. Travel time to airport.

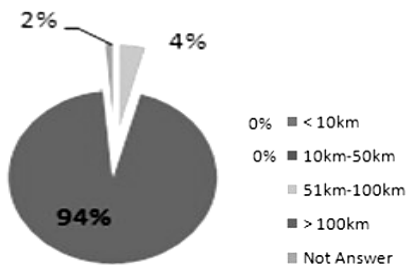


Figure 14. Percentage of distance to seaport.

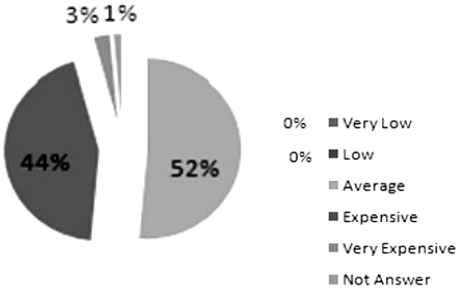


Figure 15. Perception of cost to seaport.

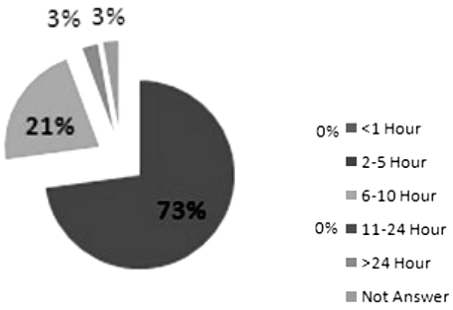


Figure 16. Travel time to seaport.

We could make assumption that the respondents which answer more than 24 hours shipping through farther ports. Akpenyo (2006) and World Wide (2011) mention the advantages in exporting by sea freight, which are:

a) Could serve bulky shipments.
b) Has the cheaper rate as compared to air.
c) Provide adequate physical protection for goods.

Eopalla (2001) implies that to make the choice, the decision maker in the SMEs could and should consider the unit price or cost of the goods.

There were more than 5 (five) countries of destination of goods movement. Figure 17 and Figure 18 show the destination country and the travel required.

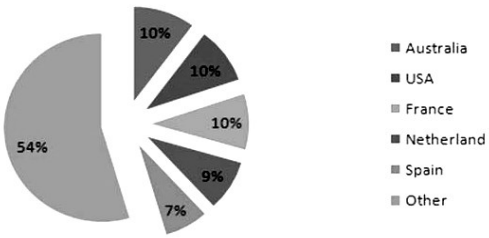


Figure 17. Percentage of destination countries.

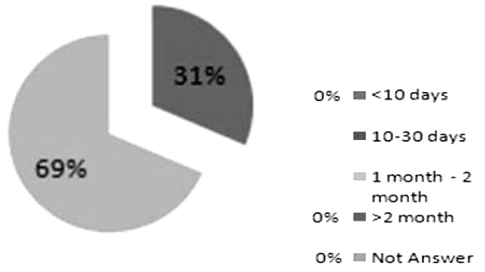


Figure 18. Travel time to destination country.

The difference with result of travel time calculation in www.ports.com is quite large. In example, travel time from Tanjung Emas Seaport to Port of New York, USA, takes only 20 days at 24 knots. The minimum 10 days different could probably due to consolidation process and to obtain the permit to export the goods.

It was found from the survey that the satisfaction of the logistics companies was generally very low (see Figure 19 and Figure 20). In total, the author could identify 41 freight forwarder companies which used by the SMEs.

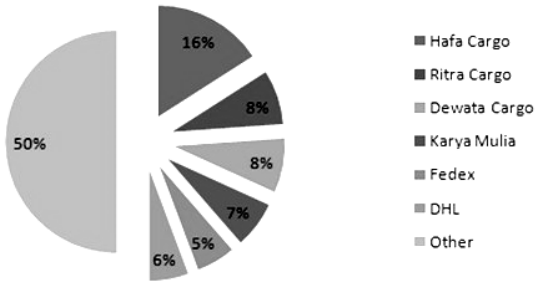


Figure 19. Percentage of logistic companies used by respondents.

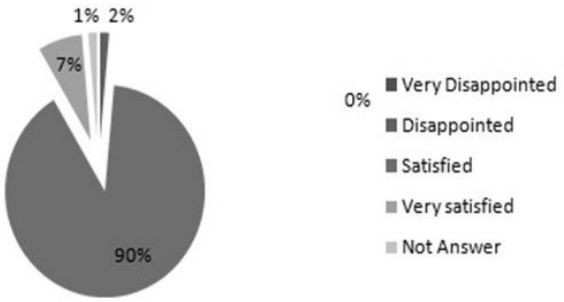


Figure 20. Percentage of perception on service.

The type of problems and intensity/seriousness of problems experienced by the stakeholders were generally significant (see Figure 21 and Figure 22).

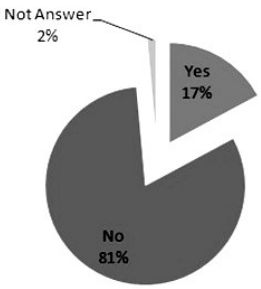


Figure 21. Percentage of having experience on problems.

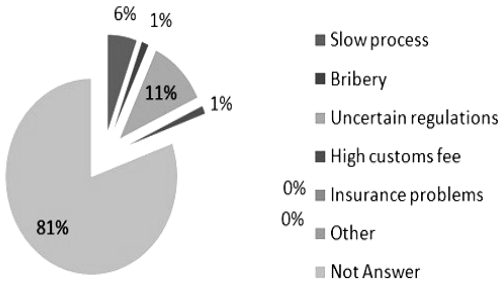


Figure 22. Percentage of problem received.

4.2 Survey 2 Results and Analysis

The overall results of survey 2 were shown in Table 4 and Figure 23 thru Figure 28.

Table 4. List of respondents for survey 2

No.	Name of Company
1.	PT. Hafa
2.	PT. Ritra Cargo Indonesia
3.	PT. Dewata Freight
4.	PT. Bisma Taruna
5.	TNT
6.	PT. Freight Express
7.	Cardig Express
8.	DHL
9.	PT. Global Putra International Group

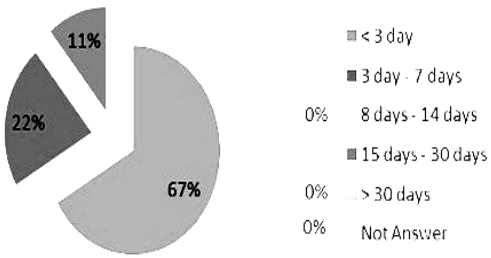


Figure 23. Percentage of waiting time in warehouse to destination country by airplane.

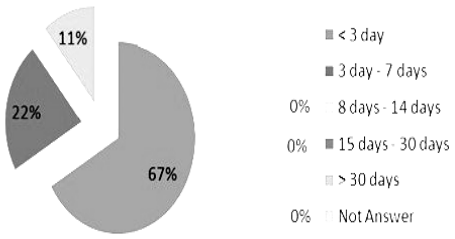


Figure 24. Percentage of waiting time in warehouse to destination country by ship.

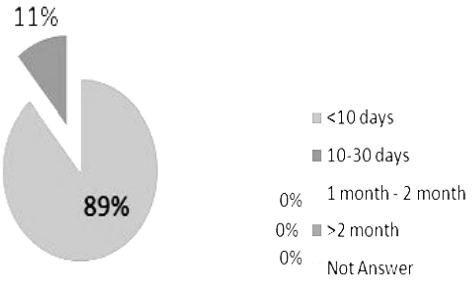


Figure 25. Percentage of journey time to destination country by airplane.

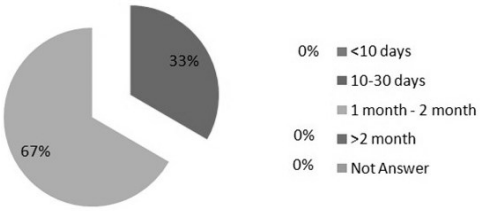


Figure 26. Percentage of journey time to destination country by ship.

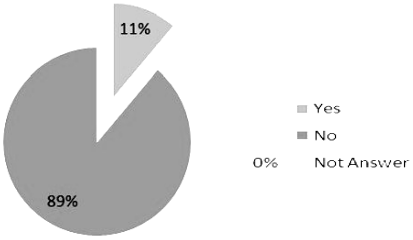


Figure 27. Percentage of problems with customs in air freight.

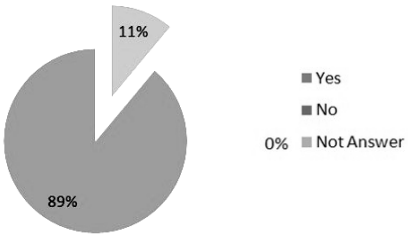
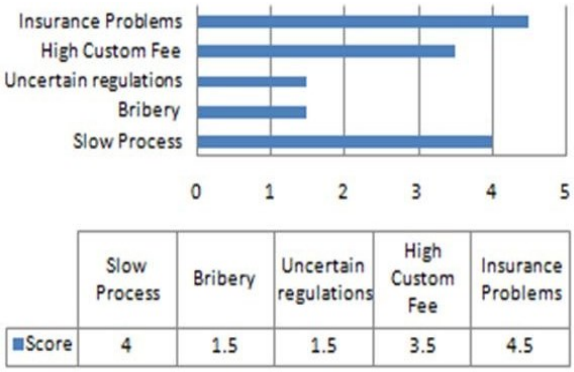
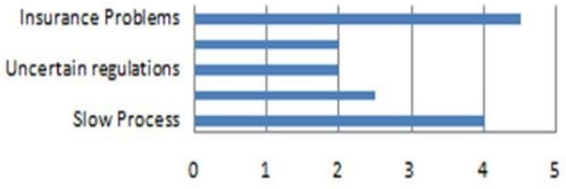


Figure 28. Percentage of problems with customs in sea freight.



	Slow Process	Bribery	Uncertain regulations	High Custom Fee	Insurance Problems
Score	4	1.5	1.5	3.5	4.5

Figure 29. Majority of each problem for air freight.



	Slow Process	Bribery	Uncertain regulations	High Custom Fee	Insurance Problems
Score	4	2.5	2	2	4.5

Figure 30. Majority of each problem for sea freight.

4.3 Analysis of the Loss Caused By Inefficient Logistics in Exporting

The first calculation is based on assumption if Indonesia logistics system is more efficient. The author makes assumption that 15 % is reasonable number for percentage of logistics cost to GDP, which is quite similar to Malaysia (Wenas, 2012). Hence, the loss by the difference is:

Loss = (Current Cost – Efficient Cost) x GDP 2011
= (27% – 15%) x $ 846,832,283,153
= $ 101,619,873,978.36

Another loss is caused by the reduced market share, due to high logistics costs. As mentioned in Chapter 2, Hummels (1999, cited by Carruthers et al., 2010) estimates that additional 5-8 percent market share will be gained by exporters with 1 percent lower shipping costs. If we reverse the logic, there will be loss in market share by 5-8 % if we increase the logistics cost. Hence the loss in market share is:

Loss = (Current Cost – Efficient Cost) x 6.5%
= 12 x 6.5 % = 78 %

4.4 Determination of Alternative Solutions

Table 5. Detail marking of each solution

Solutions	Benefit (40%)	Cost (40%)	Easy to Implement (20%)	Total
Move the Jogja Inland Port to better location	7	4	4	5.2
Use GPS as a tool to provide information about	5	5	3	4.6
Developing and Optimizing SMEs Associations as 5th Party Logistics	7	8	7	7.4
Construct Clear and Market Responsive	7	8	7	7.4
Improve the Facilities of Transport Infrastructure	9	3	7	6.2

The author then recommends only three solutions, which are:

a) Developing and Optimizing SMEs Associations as 5th Party Logistics.
b) Construct Clear and Market Responsive Regulations.
c) Improve the Facilities of Transport Infrastructure

5 CONCLUSIONS AND SUGGESTIONS

5.1 Conclusions

From the analysis and evaluation in this study several conclusions can be drawn as follows:

a) Based on the results, the main export commodity from SMEs in Yogyakarta.
b) Province is dominated by craft, which contributes to 70% of total respondents.
c) Most of the consignments have value from USD 2500 – USD 10,000, exactly 56%. 23% of them send goods with value less than USD 2500. Almost rest of them send item with value higher than USD 10,000.
d) Based on the result, we could conclude that most of the SMEs have already implemented the principle in increasing the efficiency of logistics system by having warehouses in similar regency, which is 93% of total surveyed SMEs.
e) Tanjung Emas Seaport is the main port that used by SMEs in Yogyakarta for exporting, which is 78 % of total respondents. It is logic, as Tanjung Emas Seaport is nearest container port within the area.
f) Australia, USA, and France are in the top list of destination countries. They contribute to 30 % of total destinations. They are followed by Netherland, which contributes 9 % of total destinations and Spain, which has 7 % of all the answers.
g) Almost half of the respondents think that the cost of exporting is expensive. This fact shows that they already realized that they pay more than average exporting fee.
h) In total, the author could identify 41 freight forwarder companies which used by the SMEs. Hafa Cargo has the largest percentage of the logistics companies used by respondents, followed by Ritra Cargo, Dewata Cargo, Karya Mulia, DHL, and Fedex.
i) Almost all of the respondents are satisfied with the service they received, which is 90 % of total respondents, while 7 % other are very satisfied. There are only 2 % of total respondents who is disappointed with the service. This indicates that the freight forwarder companies have met the required service level.
j) Nearly all of the SMEs never have a problem in exporting, which is 82 % of total respondents. There are only 17 % of them which have the experience in exporting. In freight forwarders' side, there is only 11 % or one respondent which ever has a problem with the customs. This indicates that the freight forwarder companies could follow the current system quite well, or they could tackle the problem before the clients notify it.
k) The biggest problem detected in this study is uncertain regulations. This problem contributes to 57 % of total respondents. It is followed by slow processing, which contributes to 29 % of total respondents, and slow process and high customs fee by 7 %. It is quite similar with the result from survey on freight forwarder companies, which shows that uncertain regulations is the largest problem for both air and sea freight. It is followed by high custom fee for air freight and bribery for sea freight. This specifies that the government has not provided adequate socialization about the regulations both on the SMEs and freight forwarder companies.
l) The author also discovered that there are two type of loss suffered both by government and the SMEs themselves. First loss is based on

assumption if Indonesia logistics system is more efficient, amounted to $ 101,619,873,978.36. Another loss is caused by the reduced market share, due to high logistics costs, which is 78 % of loss from current market share.

m) The author recommends several solution to improve current logistics system, which are (1) Developing and Optimizing SMEs Associations as 5th Party Logistics, (2) Construct Clear and Market Responsive Regulations, and (3) Improve the Facilities of Transport Infrastructure

5.2 Suggestions

Some suggestions to authors to make are as follows:

a) More research should be conducted in other areas as comparison with this study.
b) Additional statistical analysis could be done in further research by using the data provided in this study.
c) Further researches can be conducted to evaluate the results of the implementation of the given solutions.
d) A model of the logistics system could be built as a tool to help designing and evaluating the solutions.

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